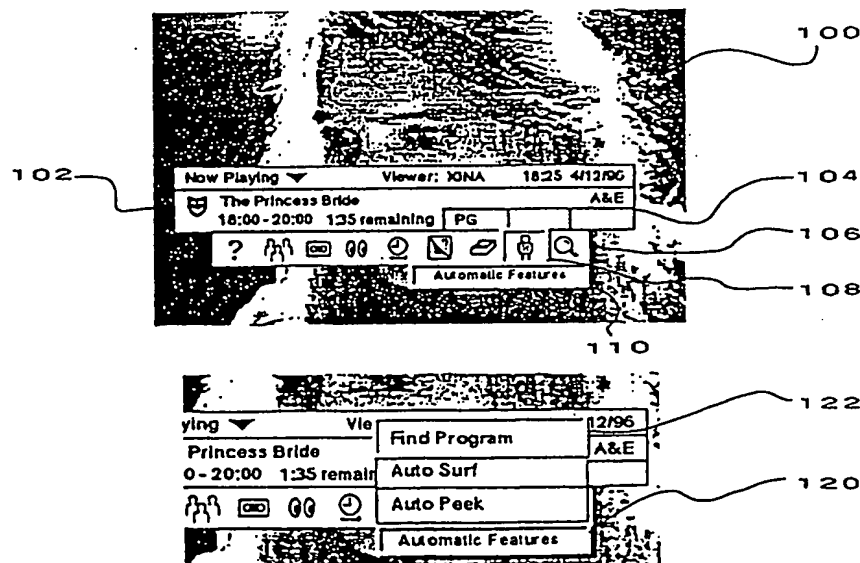




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: METHOD AND APPARATUS FOR LOCATING A PROGRAM IN AN ELECTRONIC PROGRAM GUIDE



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(57) Abstract

A method and apparatus are disclosed for locating desired television programs and categories of television programs. To facilitate viewer access to preferred programming, program guide information of an electronic program guide may be searched in accordance with viewer-specified or system default parameters. Viewer-specified parameters illustratively include program names, partial program names, categories of programming, and subcategories of programming. Once the search is complete, a means is provided for displaying information on television programs in the categories, or with titles, that match the television program titles or categories of interest.

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METHOD AND APPARATUS FOR LOCATING A PROGRAM
IN AN ELECTRONIC PROGRAM GUIDE

BACKGROUND OF THE INVENTION

5

Technical Field

The present invention relates to the location and presentation of television programs and television program guide information to a television viewer. More particularly, the present invention relates to a method and apparatus for
10 locating a television program listed in an Electronic Programming Guide.

Discussion of the Related Art

15 Television viewing is a popular activity, and the number of available television channels has grown substantially since the early days of broadcast television, thereby providing viewers with greatly increased choices in programming. Programming guides have become important viewer tools, and indeed, are essential for efficiently locating
20 desired programs.

Paper guides, such as those provided with newspapers, are plentiful but suffer from many drawbacks. These drawbacks include possible preemption after printing and the sheer amount of information placed before the reader with
25 little, if any, visual distinction between programs. A reader interested in only a subset of the available programming is forced to search the entire listing to locate the desired program or programs.

30 More recent alternatives to paper guides, known as Electronic Program Guides ("EPG"), have been developed. EPGs provide television program listings directly on the viewer's television screen, and generally eliminate the possibility of relying on an obsolete guide as the program listings can be updated in real-time by the EPG provider. U.S. Patent No.
35 5,353,121 issued Oct. 4, 1994 to Young discloses just such an

EPG, wherein information is displayed on the viewer's television screen.

These known EPGs not only provide on-screen program listings, but also allow a viewer to tune to a desired
5 program, if such program is listed in the program guide, by interacting with the EPG via a remote control instead of manually changing channels. EPGs typically present the television listings in a grid format and give the viewer control over a cursor or pointer with which to make
10 selections. The grid may be organized in such a manner that one axis represents time and the other represents programming channels. Such grids typically present the program channels in a sequential manner such as numeric order by channel number or alphabetic order by programming source or other
15 identifier.

Although known EPGs grant viewers the convenience of identifying available television programs without resorting to other less attractive sources of information, shortcomings still exist. For example, a viewer who greatly prefers
20 sports programs over other programming will still have to search the entire grid of available programs to find those involving sporting events of interest. Further, when a viewer knows that a certain program is currently scheduled, or is scheduled sometime in the future, but does not recall
25 the station or starting time of the program, the viewer must search the entire television program guide listing to locate the same.

SUMMARY OF THE INVENTION

30 The present invention addresses the above disadvantages by providing a method and apparatus for automatically searching a television program guide listing for a specific program or a particular category of programs.

In accordance with the preferred embodiments, a novel
35 method and apparatus is provided for searching television program guide listings. This novel method and apparatus may be used to locate a particular program or to locate programs

falling into particular categories (e.g., movies, sports, and news) or subcategories of television programming. In an exemplary embodiment of the present invention, an apparatus for locating television programming is provided which
5 includes a means for acquiring television program scheduling information and for receiving user input specifying a television program title or category of interest. The apparatus further includes a means for searching the received television program scheduling information for the designated
10 television program title or category of interest and for displaying information on television programs from the television schedule information with titles, or in categories, that match the television program title or category of interest.

15

BRIEF DESCRIPTION OF THE DRAWINGS

The features and advantages of the present invention will be better understood by reference to the following detailed description, which should be read in conjunction
20 with the accompanying drawings in which:

FIG. 1A is an Electronic Program Mini-Guide, with a primary television program displayed in the background;

FIG. 1B is an Electronic Program Mini-Guide, as in FIG. 1A, with a program finder option selected;

25 FIG. 2 discloses an exemplary embodiment of a program finder, with a primary television program displayed in the background; and

FIGS. 3A and 3B disclose an exemplary embodiment of an Electronic Program Guide displaying programming information
30 that matches a viewer's search criteria.

35

DETAILED DESCRIPTION OF THE INVENTION

The following embodiments of the present invention will be described in the context of Electronic Program Guides ("EPG") and general television viewing, although those skilled in the art will recognize that the disclosed methods and structures are readily adaptable for broader application. Note that whenever the same reference numeral is repeated with respect to different figures, it refers to the corresponding structure in each such figure.

10 A television viewing environment typically incorporates a television, a viewer interface, a viewer interface remote control, and one or more viewers. Viewer interfaces are known in the art, and are commonly found in the form of a television set-top unit. The viewer interface is often
15 connected to, and between, the television and various television program/broadcast sources such as cable and satellite. The viewer interface receives input, such as television programs and television program guide information, from the broadcast sources and supplies this information to
20 the television. The viewer interface may also perform additional functions such as decoding and encoding of the television programming, and generally includes a means for accepting viewer commands, such as to change television channels, from a remote control.

25 For the purpose of describing the present invention, the viewer interface additionally includes an EPG. However, one skilled in the art will understand that an EPG could be implemented in a variety of ways, including within the television or as part of an interactive television network
30 coupled to the viewer interface. An example of a suitable EPG is disclosed in U.S. Application No. 08/556,624, entitled "Electronic Program Guide with Enhanced Presentation" and filed November 13, 1995, which is incorporated herein by reference.

35 In accordance with the present invention, a program finder that operates in conjunction with an EPG is provided for use in the above-described television viewing

environment. Drawing upon program guide information available through the EPG, the program finder may be instructed to search through the program guide information to locate specific programs, or categories (e.g., movies, sports, and news) and subcategories of programs, that are of interest. The program finder may be implemented in software and, like the EPG, downloaded into the viewer interface via an interactive television network or other means for loading software. The program finder may also be implemented as resident software in the viewer interface.

Turning now to the figures, FIG. 1A discloses a mini-guide program display 102 of an Electronic Program Guide overlaying a primary television display 100. Mini-guide display 102 comprises an event description area 104 and options bar 106.

While mini-guide display 102 is displayed over primary television display 100, an option from options bar 106 may be selected by the viewer using, for example, a remote control, with text box 110 identifying the selected option. When option 108 is selected from options bar 106, as shown in FIGS. 1A and 1B, automatic features of the EPG may be utilized. FIG. 1B discloses an illustrative list 120 of automatic features available to a viewer, and in an exemplary embodiment of the invention, a program finder option 122 is one such feature.

Although FIGS. 1A and 1B disclose one method of accessing a program finder option 122, one skilled in the art will recognize that numerous methods of activation, such as a direct command from the viewer interface remote control, are possible without exceeding the scope of the invention.

FIG. 2 discloses a program finder user interface 200 overlaying primary television display 100. User interface 200 is displayed over television display 100 upon selection of program finder option 122, and is used by a viewer to specify the viewer's program search criteria. Program name field 202 displays the characters to be used in searching for a specific television program. The characters for program

name field 202 are input by a viewer through the viewer interface remote control, and may be limited to a particular number such as eight.

Category field 204 is used to specify a category or
5 categories of programming, such as movies, sports, or news, that are to be searched for. Category field 204 expands (not shown), when selected, to display available categories and allow a viewer to select a category of programming for which to search. In one embodiment of the invention, a default
10 choice of all categories is shown when program finder interface 200 is initially displayed, but can be subsequently modified by the viewer.

Subcategory field 206 is used to refine a category-type search for programming. For example, within a movies
15 category, there may be subcategories of adventure, comedy, science fiction, etc. Subcategory field 206 also expands (not shown) when selected, to display available subcategories and allow a viewer to specify at least one subcategory. In one embodiment of the invention, a default choice of all
20 subcategories is selected when program finder interface 200 is initially displayed, but can be subsequently modified by the viewer.

Day field 208 is used to choose the day or days of the programming guide listing in which to search for viewer-
25 specified programming. Illustrative examples of possible choices include the present day, a specific day of the week, or any day. If a specific day of the week is chosen, including the present day, only that particular day is searched for the desired programming. If "any day" is
30 chosen, all days for which programming information is available is searched. In one embodiment of the present invention, a default choice of the present day is automatically selected when program finder interface 200 is initially displayed, but can be changed by the viewer.

35 The programming days that can be searched will be limited to the amount of programming information that has been downloaded to the EPG. Therefore, the program finder

will only search the days for which programming guide information is available and that meet the viewer's day field 208 parameter.

Time field 210 is used to specify the programming time within the selected day or days from which to commence the search. The program finder will only search the programming listing starting at the specified time and continue to the end of the day. In an alternative embodiment, if "any day" is chosen for day field 208, the viewer will not be allowed to set a time in time field 210, as the ability to search after a certain time for "all days" would provide a benefit to the viewer in only the rarest of instances. Time field 210 will be automatically set to the current time when program finder interface 200 is displayed, but can be changed by the viewer.

A "show programs in progress" option 212 allows the viewer to specify whether programs that are currently being broadcast or displayed should be searched and identified. If option 212 is set to "no", then the program finder will only return programming guide information concerning programs that meet the viewer's specified criteria and that have not yet started. Alternatively, if option 212 is set to "yes", then the program finder will also return programming guide information that meet the viewer's specified criteria and that have already started.

When the viewer has finished selecting search criteria, find program button 214 is selected to initiate the search. Based on the specified criteria, the program finder will search the available program guide information for matching television programming. Certain techniques may be employed to ensure the accuracy of the search results. For example, the program finder can use "fuzzy" search logic to locate matches. If such a technique is implemented, slight misspellings -- whether in program name field 202 or in the program guide information itself -- will still result in a match.

FIGS. 3A and 3B illustrate an example of the results of a program finder search. A first display 300 and a second display 302 depict a primary television display 100 overlaid with a result box 304 displaying information concerning 5 programs that match the viewer's selected search criteria. When more than one matching program is located by the program finder, result box 304 includes a scroll button 306 with which the viewer may scroll through information on the matching programs.

10 Various embodiments of the invention have been described. The descriptions are offered by way of illustration, not limitation. Thus, it will be apparent to those skilled in the art that modifications may be made to the invention as described without departing from the scope 15 of the claims set out below.

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What is claimed is:

1. A method of locating desired television programs, comprising the steps of:

- 5 acquiring television program scheduling information;
 receiving user input specifying a television program
 title of interest;
 searching said television program scheduling information
 for said television program title of interest; and
10 displaying information on television programs from said
 television program schedule information with titles that
 match said television program title of interest.

2. The method of claim 1, wherein said step of displaying
15 further comprises the step of:

- displaying information on television programs from said
 television program schedule information with titles that
 match said television program title of interest only if said
 television programs are scheduled within predetermined time
20 constraints.

3. An apparatus for locating television programming, comprising:

- means for acquiring television program scheduling
25 information;
 means for receiving user input specifying a television
 program title of interest;
 means for searching said television program scheduling
 information for said television program title of interest;
30 and
 means for displaying information on television programs
 from said television program schedule information with titles
 that match said television program title of interest.

35 4. The apparatus of claim 3, wherein said displaying means
 further comprises:

means for displaying information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined
5 time constraints.

5. A computer-readable medium which can be used to direct a computer to locate television programming, comprising:

means for directing the computer to acquire television
10 program scheduling information;

means for directing the computer to receive user input specifying a television program title of interest;

means for directing the computer to search said television program scheduling information for said television
15 program title of interest; and

means for directing the computer to display information on television programs from said television program schedule information with titles that match said television program title of interest.

20

6. The apparatus of claim 5, wherein said means for directing the computer to display information further comprises:

means for directing the computer to display information
25 on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

30 7. In a set-top unit adapted for coupling to a television, an apparatus for locating television programming, said apparatus comprising:

means for acquiring television program scheduling information;

35 means for receiving user input specifying a television program title of interest;

means for searching said television program scheduling
information for said television program title of interest;
and

means for displaying information on television programs
5 from said television program schedule information with titles
that match said television program title of interest.

8. The apparatus of claim 7, wherein said displaying means
further comprises:

10 means for displaying information on television programs
from said television program schedule information with titles
that match said television program title of interest only if
said television programs are scheduled within predetermined
time constraints.

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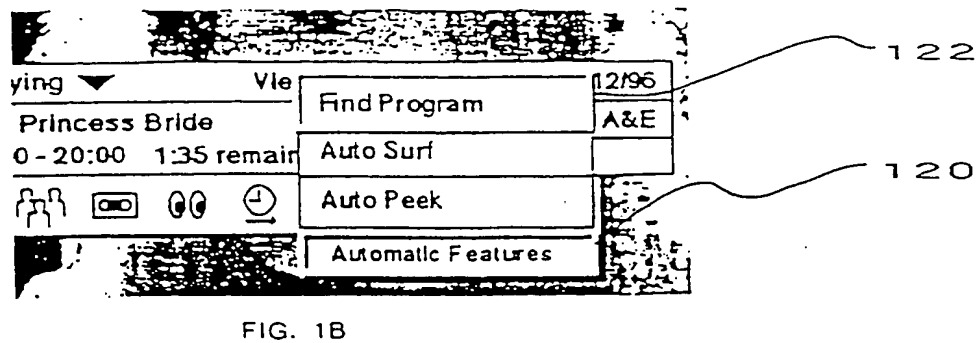
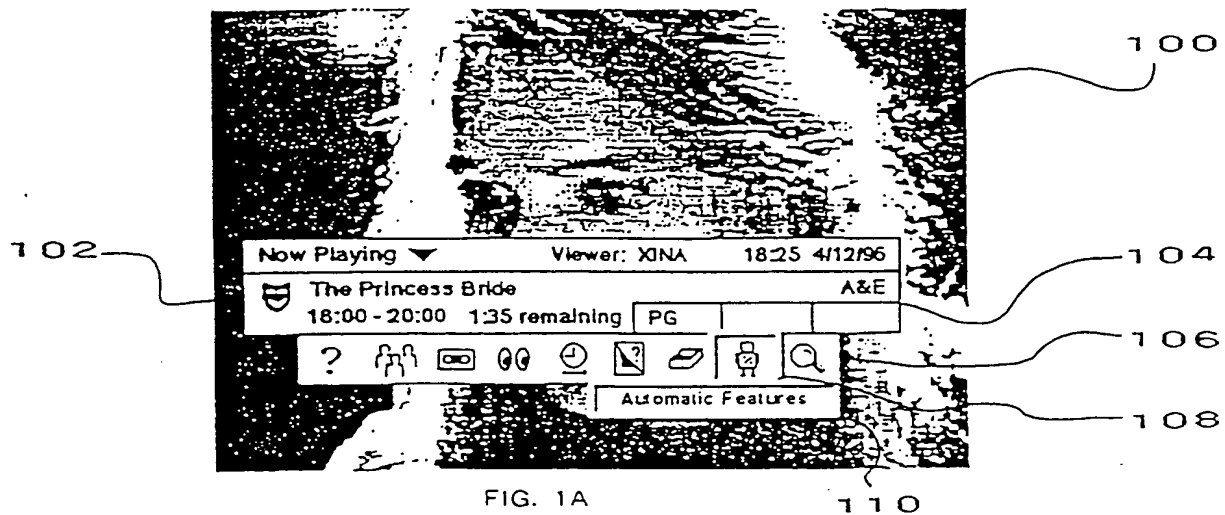


FIG. 2 is a graphical user interface (GUI) for finding a program. The interface is displayed on a screen 100. It includes the following elements:

- Program Name** (202): A text input field with a cursor, followed by a series of seven small square boxes (204) for additional input.
- Category** (206): A dropdown menu showing "All".
- Sub-category** (208): A dropdown menu showing "All".
- Day** (210): A dropdown menu showing "Today".
- From Time** (212): A time selection interface with three boxes: "19", "00", and "PM".
- Show Programs in Progress?** (214): A checkbox with a "Yes" button.
- Find Program** (216): A button to execute the search.

FIG. 2

FIG. 3A

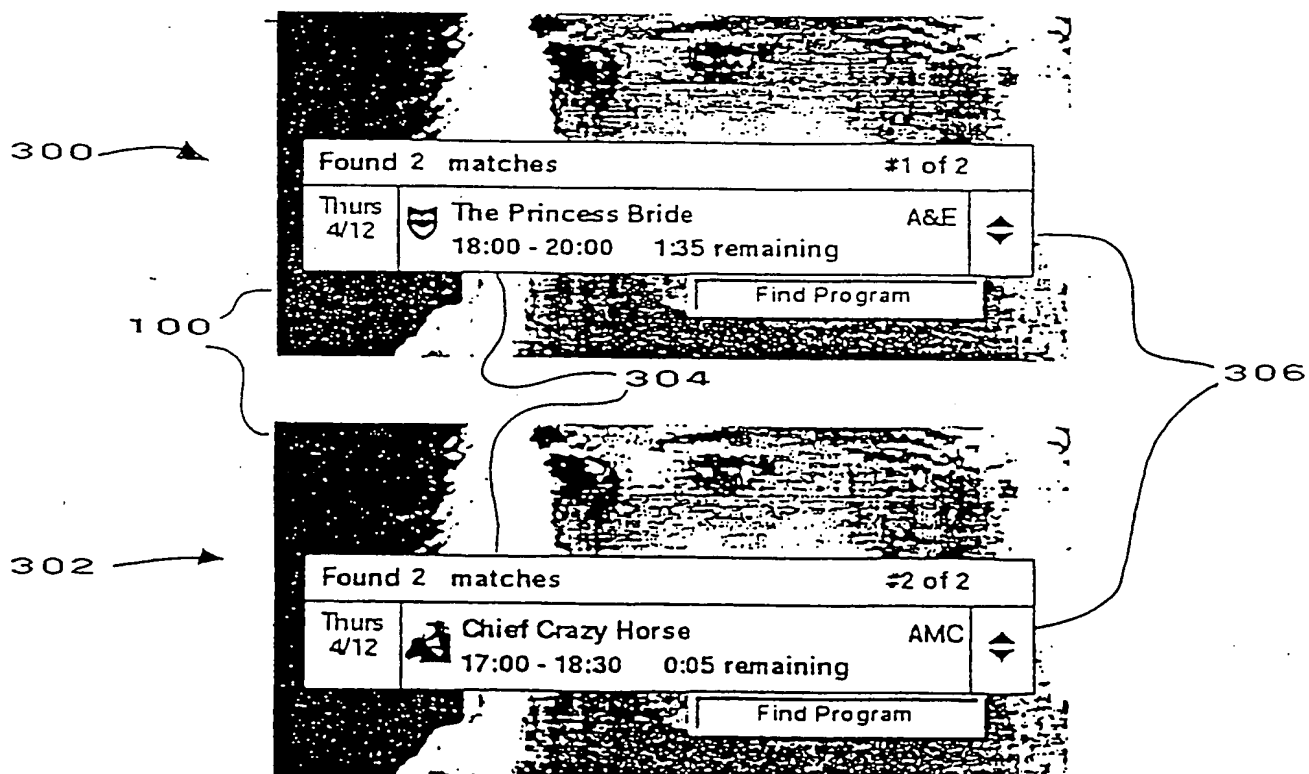
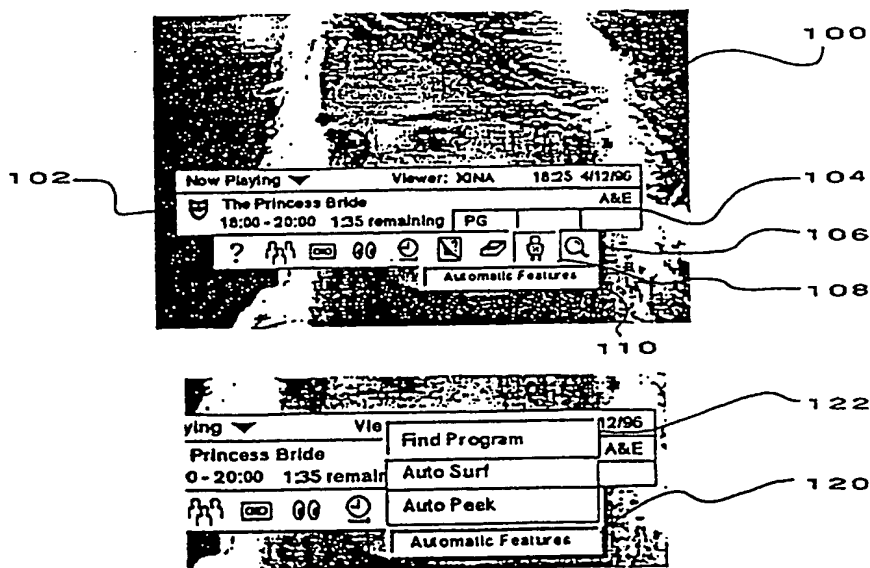


FIG. 3B

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(71) Applicant: HYUNDAI ELECTRONICS AMERICA [US/US]; 3101 North First Street, San Jose, CA 95134 (US).		
(72) Inventor: BEDARD, Karen; 2275 Glenkirk Drive, San Jose, CA 95124 (US).		
(74) Agents: STARK, Jon, R. et al.; Pennie & Edmonds LLP, 1155 Avenue of the Americas, New York, NY 10036 (US).		(88) Date of publication of the international search report: 8 October 1998 (08.10.98)
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(54) Title: METHOD AND APPARATUS FOR LOCATING A PROGRAM IN AN ELECTRONIC PROGRAM GUIDE



(57) Abstract

A method and apparatus are disclosed for locating desired television programs and categories of television programs. To facilitate viewer access to preferred programming as a mini program guide display (102), program guide information of an electronic program guide may be searched in accordance with viewer-specified or system default parameters. Viewer-specified parameters illustratively include program names filed (202), partial program names, categories of programming (204), and subcategories field (206) of programming. Once the search is complete, a primary television means (100) is provided for displaying information on television programs in the categories, or with titles, that match the television program titles or categories of interest.

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INTERNATIONAL SEARCH REPORT

International application No.
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS
search term: program guide, schedule, title?, categor?

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 5,629,733 A (YOUMAN et al.) 13 May 1997, col 7, lines 41-50, col. 31, line 1-col. 32, line 33, fig. 1, fig. 38A-38F.	1-8
A	US 5,523,796 A (MARSHALL et al) 04 June 1996, entire document	1-8
X	US 5,526,034 A (HOARTY et al) 11 June 1996, fig. 36-40, col. 19-47.	1-8



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